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Higgins

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(54) **SYSTEMS AND METHODS FOR ALTERING ONE OR MORE VEHICLE FUNCTIONS**

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This patent is subject to a terminal disclaimer.

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CPC B60J 7/057; E05F 15/40; B60Q 9/007
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,848,499 A 7/1989 Martinet et al.
4,897,642 A 1/1990 DiLullo et al.
(Continued)

FOREIGN PATENT DOCUMENTS

GB 2505939 A 3/2014
GB 2505949 A 3/2014

OTHER PUBLICATIONS

"RanchCams: Barn Cameras, Horse Trailer Cameras, Wired/Wireless"; website <http://www.ranchcams.net/>; accessed Aug. 28, 2014.
(Continued)

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(57) **ABSTRACT**

Systems for altering vehicle functions are provided. A system for altering a vehicle function includes one or more processors, one or more memory modules communicatively coupled to the one or more processors, and machine readable instructions stored in the one or more memory modules. When executed by the one or more processors, the machine readable instructions may cause the system to determine a presence of a roof mounted article on a vehicle and disable at least one movable roof member function in response to the determination. In some embodiments, in response to determining that the vehicle is proximate a structure and determining the presence of the vehicle mounted article on the vehicle, the system may generate a notification pertaining to the vehicle mounted article. In some embodiments, the system may provide navigation assistance based on the determination that the vehicle mounted article is present on the vehicle.

20 Claims, 2 Drawing Sheets